

# AN EAST-WEST *AQUILA* EAGLE MIGRATION IN THE HIMALAYAS<sup>1</sup>

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An autumn east-west *Aquila* migration in the Himalayas is reported in detail for the first time. *A. nipalensis* predominates with *A. clanga* and *A. heliaca* also occurring. The migration period lasts for more than a month. A high count of 275 birds per hour is reported and a minimum estimate indicates that over 45,000 birds may be involved. The migration has been noted at different points over a distance of some 1000 kilometres (from Dzungri, Sikkim to Naini Tal, Kumaon). Where these birds winter is unknown.

## INTRODUCTION

That many birds from accentors to cranes and geese migrate across the Himalayas in a north-south direction is well known (see Fleming, Fleming and Bangdel 1979:13), although how high most of the birds fly while crossing the chain, at what points they actually pass over the crest, and in what numbers they appear needs much additional investigation. That some raptor species, notably *Aquila* eagles, use the Himalayas as an east-west pathway, moving westward in a steady stream during the autumn has remained largely unreported although Hutton in Mussoorie and Donald near Dharamsala mention sightings (Donald 1924: 1054-1055). While our current understanding of this *Aquila* migration is still far from complete, we present our data hoping to encourage additional study of this phenomenon.

## OBSERVATIONS

The initial first-hand information that eagles migrate from east to west in the Himalayas was gathered on 28 Oct. 1971 during a visit to the delightful Lariya Kanta Hill [elevation

just over 2440 m (8000')] five kilometres north-east of Naini Tal in the Kumaon Himalayas. While sitting on top of this hill, we noticed an *Aquila nipalensis* circling in the east below us. It rapidly gained height, soaring quite near, and then glided away to the west. This was at 12.30 hrs. Then we found a group of six birds that again started out below us but rose on broad wings to pass nearby and glide west. More followed. In the first hour of observation, 17 *Aquila* eagles passed our field of view. Between 13.30 and 14.17 hrs (47 min.), an additional 36 birds appeared. At 14.17 the clouds, already building for some time, enveloped us and obscured further observations. All birds as far as we could tell were *A. nipalensis*.

Subsequently, in 1975, my father, R. L. Fleming, Sr., noted a similar concentration of *Aquila* eagles in late October on a ridge called "Two Trees" at the southern edge of the Kathmandu Valley. On this occasion he spotted, at about 10.30 hrs, some 16 birds approaching from the east. They soared near him and then glided west along the north side of the Chandra-giri ridge. About 30 minutes later he noted a "rather haphazard" collection of some 30 birds following in exactly the same manner. These were identified as *A. nipalensis*.

Similarly, on 19 Nov. 1975, we noted eagles along the northern edge of Kathmandu Valley

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where they circled over the Shivpuri monastery and then glided to Ahale Dara above which they soared again to gain height. A total of 44 birds were counted between 11.13 and 12.13 hrs.

Thus we were aware that *Aquila* eagles migrate from east to west, but were unprepared for the numbers that appeared during a visit to the Annapurna area, Central Nepal in the autumn of 1976. On this occasion, we were climbing towards the Dhampus ridge from Suikhet valley when at about 16.00 hrs on 31 Oct. we noted 17 eagles circling closely overhead. The eagles were at about 1708 metres (5600') with heavy clouds above them.

That night we camped on the Dhampus ridge and the following morning (1 Nov.) kept an early and sharp lookout in the direction where the eagles had been seen the previous evening. But as we saw no further activity, our attention was drawn to the nearby forest.

Early on the morning of 2 November we shifted our operations to a campsite one kilometre further north and suddenly spotted eagles. They appeared on a route approximately three kilometres north of where we had been them on 31st Oct. During these observations (see Table 1), the weather remained clear and the eagles passed over within about 305 metres (1000') of the ridge, flying at an estimated altitude of between 2745 metres (9000') and 3050 metres (10000'). Three species of eagles appeared to be represented.

We continued our observations on 3 and 4 November and noted the following concentrations (numbers of birds here reflect totals for the time period, not aggregations of large size travelling together).

By 5 November we had noted that in this general area, eagles used three different routes, depending on the time of day. At first, eagles passed far to the north, close to the snow peaks.

TABLE 1

Location: Dhampus, Central Nepal		Date: 2 Nov. 1976
Time of Day	Numbers of eagles divided into the sizes of the groups as they passed	
9.55 to 10.00	2, 11, 2	
10.00 to 10.05	2, 4, 3, 2	
10.05 to 10.10	9, 1, 20, 4, 4	
10.10 to 10.15	6, 3, 8, 1, 5, 1, 1, 1	
10.15 to 10.20	2, 1, 2, 2, 1, 2, 1, 2	
10.20 to 10.25	6, 1, 2, 3, 5, 2, 4	
10.25 to 10.30	1, 18, 2, 1, 11, 3, 4	
10.30 to 10.35	2, 1, 1, 7, 5, 1	
10.35 to 10.40	6, 2, 6	
10.40 to 10.45	2, 1, 11, 3, 10, 2, 9, 6, 1	
10.45 to 10.50	6, 3, 4, 1	
10.50 to 10.55	4, 2, 9, 3, 1	
10.55 to 11.00	10, 3, 6, 6, 7	
Total of the above: 275 in 1 hr; 307 in 1 hr 5 min.		
15.30 to 16.10	2, 5, 2, 1, 4, 17, 3, 1, 2, 1, 4, 3, 2, 1	
Total of 48 birds in 40 min.		
03 Nov. 1976, Dhampus, central Nepal		
9.10 to 9.30	36 birds	
9.30 to 9.45	66	
9.45 to 10.00	43	
Total of 145 birds in 50 min.		
First bird of the day seen at 9.10		
04 Nov. 1976, Dhampus, central Nepal		
15.10 to 16.10	131 birds	
Last eagle seen at 16.30		

But when cloud buildup covered the northern route, they moved to a "middle" section (the Dhampus ridge) which they used until clouds forced them to a southern flyway (the Kaski ridge). On 5 November, the shift from the middle to the southern route occurred between 15.55 and 16.00 as the following data shows:

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5 Nov. 1976, Dhampus, central Nepal; observations on the "middle route":

15.40 to 15.45	18 birds
15.45 to 15.50	8
15.50 to 15.55	1
none after 15.55 hrs.	

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Observations on the "southern route":

No birds noted prior to 15.55	
15.55 to 16.00	7 birds
16.00 to 16.05	8
16.05 to 16.10	25
16.10 to 16.15	33
Last bird seen at 16.14 (sunset at about 17.00 hrs)	

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6 Nov. 1976, Hanja, central Nepal; observations on the "southern route":

15.00 to 15.05	18 birds
15.05 to 15.10	6
15.10 to 15.15	11
15.15 to 15.20	7
15.20 to 15.25	6
15.25 to 15.30	7
15.30 to 15.35	3
15.35 to 15.40	3
15.40 to 15.45	5

Last bird seen at 15.44

Total of 66 birds in 45 mins.

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In October 1978 we found a north-south migration along the Kali Gandaki valley near Lete. These eagles circled over Lake Titi area and then, crossing the Kali Gandaki, they continued around a spur of Dhaulagiri, staying close to the mountainside. On the same day, we again observed numbers circling about the cliffs immediately above Ghasa. From here the birds glided away in a south-south-west direction and would likely join the main east-west stream somewhere southeast of Dhaulagiri.

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Observations in the Kali Gandaki valley, near Lete, 24 Oct. 1978:

10.30 to 10.45	27 birds
10.45 to 11.00	26
11.00 to 11.15	23

Total of 76 birds in 45 mins.

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We have very little data from the eastern parts of Nepal or from the eastern Himalayas. Phil Hall and Jack Cox reported that on the 13th of November 1978, between 12.00 and 13.00 hrs they noted 10 eagles circling over the ridge above Ilam, eastern Nepal, and then gliding west. These were identified as 8 *A. nipalensis* and 2 *A. clanga*.

On 3 Nov. 1980 we noted five *A. nipalensis* soaring at about 12,500' over the Dzungri ridge in western Sikkim. No further sightings ensued.

In addition, we have scattered observations of eagles moving south along the Arun river valley as well as the Dudh Kosi valley, both in eastern Nepal.

#### REMARKS

From the foregoing data, it can be seen that an east-west *Aquila* eagle migration occurs in the Himalayas in the autumn. The birds use updrafts to gain height and then glide to attain horizontal distance. The exact route used (specific hilltops and ridge lines) does not remain static, but varies according to local cloud build up. Himalayan autumn days usually begin with clear skies but by mid-morning clouds appear that by late afternoon may develop into towering thunderheads. Eagles avoid these clouds and the change of route, in the Annapurna area, is from Machapuchare to over Pokhara Bazaar, an estimated shift of about 8 km.

Eagles begin flying just after 9.00 hrs and this coincides with the beginning of sun-generated updrafts. The migration continues fairly steadily throughout most of the day. Most birds moving after about 16:00 hrs need to beat their wings in order to maintain altitude and migration ceases for the day at about 16.30 (with sunset at about 17.00 hrs). Eagles passed as single birds or in groups of up to twenty individuals.



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As for the "flow rate" of the migration, we noted (on 3 November) 145 birds in the first 50 minutes of the period which would allow approximately 174 birds per hour. At the end of the day, on 4 November, we observed 171 birds in the final 1 hour and 15 minutes which equates with about 137 birds per hour. The highest count recorded was of 275 birds per hour between 9.55 and 10.55.

In discussing total numbers of eagles involved in this migration, we are on shaky ground. But if we allow an average of 200 birds per hour over a seven and a half hour span, this gives a total of 1,500 birds per day. The migration lasts for at least 38 days (24 Oct. to 30 Nov.) and very likely carries over to about 45 days, so that using a conservative figure of 30 days multiplied by 1500 birds, we reach a total of 45,000 individuals. Also it should be noted that these figures are based on sightings from the Pokhara area of Nepal. Thus all the eagles coming down the Kali Gandaki valley (i.e. about 100 in an hour) would join the main flow west of Pokhara and would not be included in the 45,000. While these figures are extrapolated from grossly insufficient data, they do show considerable movement and indicate that a further detailed study of this phenomenon is much needed.

The exact species composition of this migration is yet to be determined. Certainly three species take part: *A. nipalensis*, *A. clanga* and *A. heliaca* with the majority appearing to be *A. nipalensis*. Eagle identification can be difficult and we were unable to determine exact percentages due to the speed of the migration, the distance of many birds from the observer, and unfavourable sighting angles.

Curiously, this migration appears to be restricted almost entirely to *Aquila* eagles. On one occasion we saw two Hen Harriers (*Circus cyaneus*) with the eagles and one time a Eura-

sian Buteo (*Buteo buteo*) came past, but the eagles remained surprisingly free of migratory associates. In many cases, various vulture species also used the updrafts and while the vultures were not on migration, one had to be careful to distinguish eagles from vultures when counting birds at a distance.

Most birds appear to be coming from the direction of Tibet. Besides the sightings in the Kali Gandaki valley, we also noted birds in the Arun and Dudh Kosi valleys. It is likely that the eagles cross the Himalayas on a broad front, using valley systems as navigational aids, and then join forces for a mass westward progression.

Where these birds are going we do not know. In winter on the plains of India one sees some *Aquila* eagles but unless there is some as yet undiscovered concentration of eagles in the subcontinent, it is hard to see where 45,000 eagles might winter. Africa appears to be a favourite wintering ground for *A. nipalensis* and the eagles are common in east and central Africa (Williams 1963: 55) and they occur as far south as South Africa (McLachlan and Liversidge 1978: 99). Might our Himalayan eagles not be going to Africa? In the autumn and spring we frequently see little knots of the Redfooted Falcon (*Falco vespertinus*) and the Lesser Kestrel (*Falco naumanni*) as they pass through from China to Africa (and reverse in the spring). Possibly the eagles are following suit?

We have been discussing an autumn migration; curiously we lack figures for any concentrated form of *Aquila* migration in the spring. We do note scattered birds in high altitude valleys (such as in the Everest National Park) in spring, but have never seen substantial numbers. Obviously a great deal of additional investigation will be necessary before we will be

able to determine the full extent of this *Aquila* migration.

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